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A strongly convergent combined relaxation method in hilbert spaces

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Abstract

We consider a combined relaxation method for variational inequalities in a Hilbert space setting. Methods of this class are known to solve finite-dimensional variational inequalities under mild monotonicity type assumptions, whereas in Hilbert space strong monotonicity is the standard assumption for strong convergence. Here, we relax this condition and show strong convergence of such a method, when strong monotonicity holds only on a subspace of finite co-dimension. Thus, the method applies to semi-coercive unilateral boundary value problems in mathematical physics. © 2014 Copyright Taylor & Francis Group, LLC.

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Keywords

Combined relaxation methods, Finite co-dimension, Hilbert space, Semi-coercive boundary value problem, Strong convergence, Strong monotonicity, Variational inequalities